



--

--	--	--	--	--

--	--	--	--

0438/33

May/June 2016

1 hour 15 minutes

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

DO **NOT** WRITE IN ANY BARCODES.

You may lose marks if you do not show your working or if you do not use appropriate units.

The number of marks is given in brackets [] at the end of each question or part question.

This document consists of **21** printed pages and **3** blank pages.

BLANK PAGE

1 Fig. 1.1 shows five arthropods.

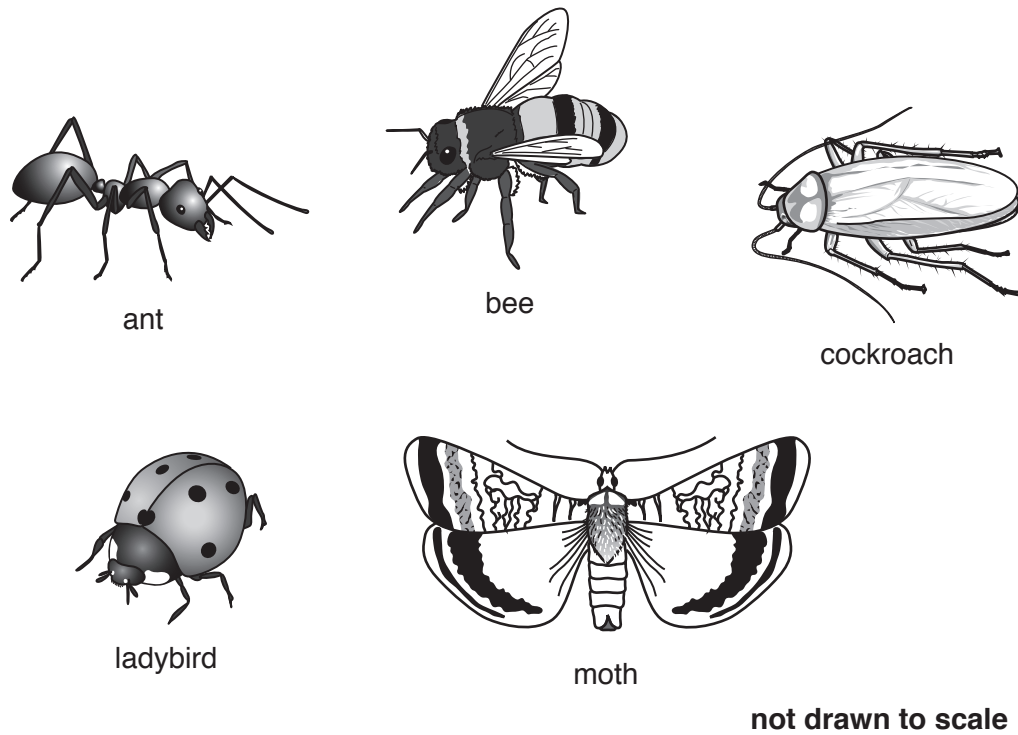


Fig. 1.1

(a) State **one** feature that is shared by **all** arthropods.

.....[1]

(b) The five animals in Fig. 1.1 all belong to the same group of arthropods.

(i) Name this group of arthropods.

Choose your answer from this list.

arachnids crustaceans insects myriapods

.....[1]

(ii) State **two** visible features of the bee, shown in Fig. 1.1, which place it in this group.

1

2

[2]

[Total: 4]

- 2 Fig. 2.1 shows the flow of blood through the human heart and its associated blood vessels **A**, **B**, **C** and **D**.

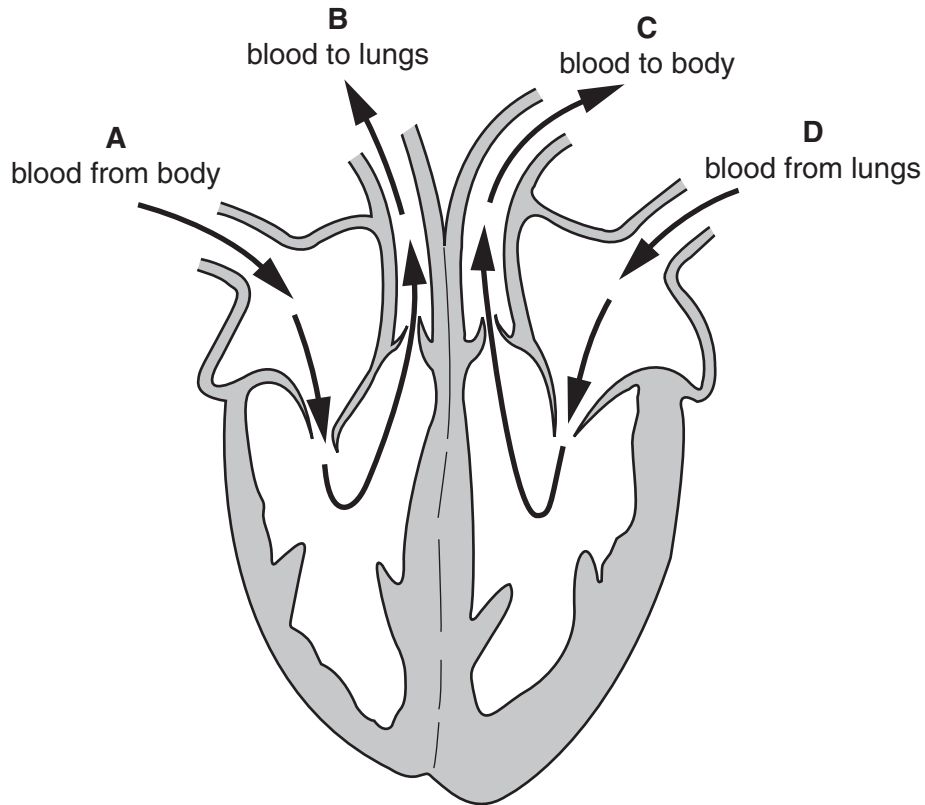


Fig. 2.1

- (a) (i) State **two** ways in which the structure of blood vessel **C** is different from the structure of blood vessel **A**.

1

2

[2]

- (ii) Tick the box that describes the blood in the vessel labeled **D**.

high pressure, deoxygenated

☐

high pressure, oxygenated

☐

low pressure, deoxygenated

☐

low pressure, oxygenated

☐

[1]

- (b) Complete the flow chart by writing the **name** of each blood vessel in the correct box to show the order in which blood travels through them.

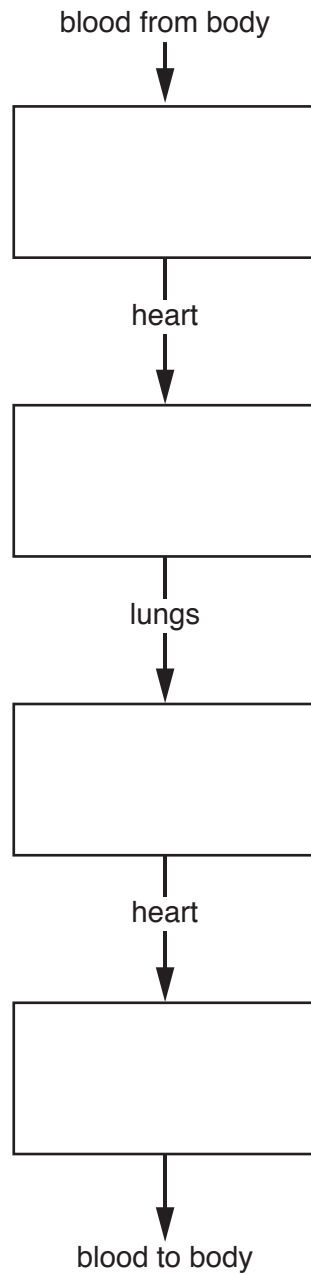
Use names from this list.

aorta

pulmonary artery

pulmonary vein

vena cava



[3]

[Total: 6]

BLANK PAGE

3 (a) Water enters plants through the root hairs and escapes to the air from the leaves.

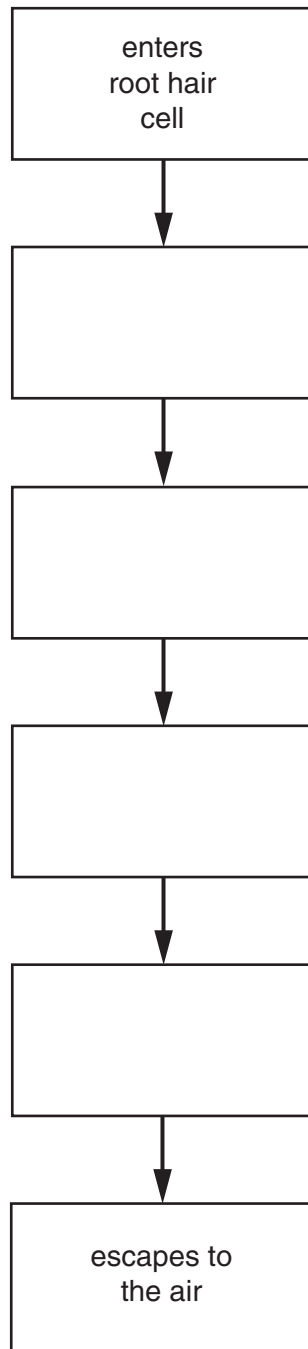
(i) Name the term that is used to describe the loss of water vapor from the leaves.

.....[1]

(ii) Complete the flow chart by writing in the boxes the names of the parts through which water passes after it enters the root hair cells.

Choose words from the list.

mesophyll cells cortex cells stomata xylem



[3]

Fig. 3.1 shows a display of cut flowers in a shop.

At 6 am the flowers were placed in identical jars, **E**, **F**, **G** and **H**.

Each jar contained 500 cm^3 of water.

At 8 pm the jars all contained different volumes of water.

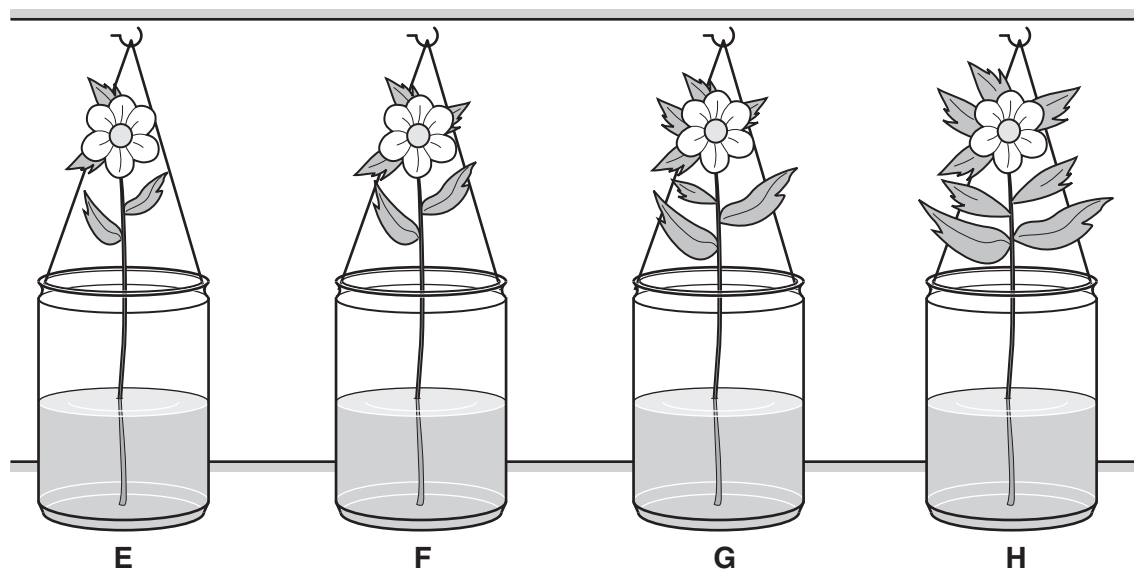


Fig. 3.1

- (b) The volume of water remaining in jars **E**, **F**, **G** and **H** was measured at intervals between 6 am and 8 pm.

The results are shown in the graph in Fig. 3.2.

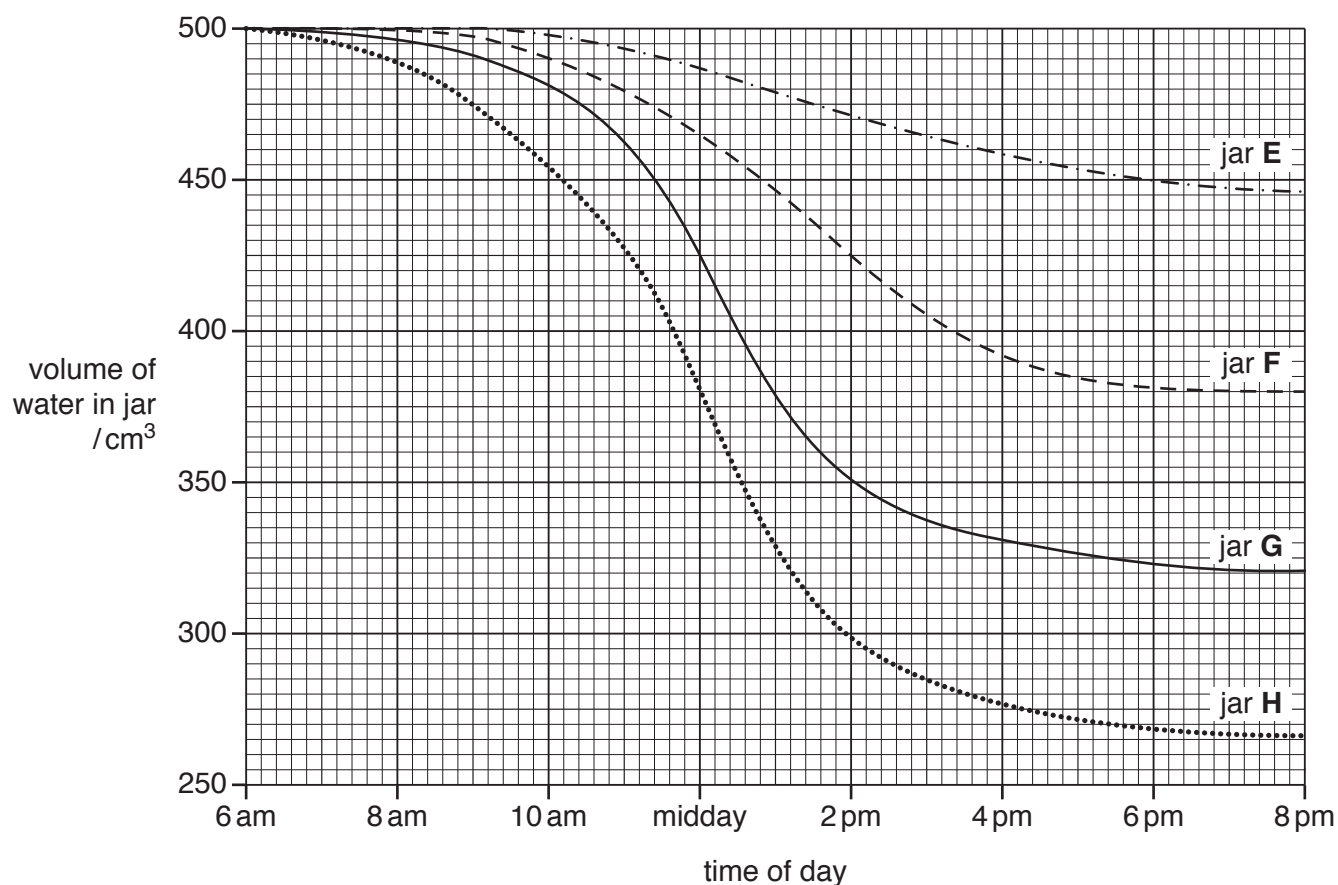


Fig. 3.2

- (i) Using data from Fig. 3.2, describe the changes in the volume of water in jar **H**.
Suggest an explanation for these changes.

.....

.....

.....

.....

.....

.....

.....

.....

.....[4]

- (ii) Calculate the difference between the volume of water in jars **G** and **H** at midday.
Show your working.

..... cm³
[1]

- (iii) Using **only** information shown in Fig. 3.1, suggest a reason for the difference in water loss from jars **G** and **H**.

.....

.....

.....[1]

[Total: 10]

- 4 (a) State what is meant by the term *balanced diet*.

.....

.....

.....

.....

.....[2]

- (b) Fig. 4.1 shows a pie chart of a person's diet.

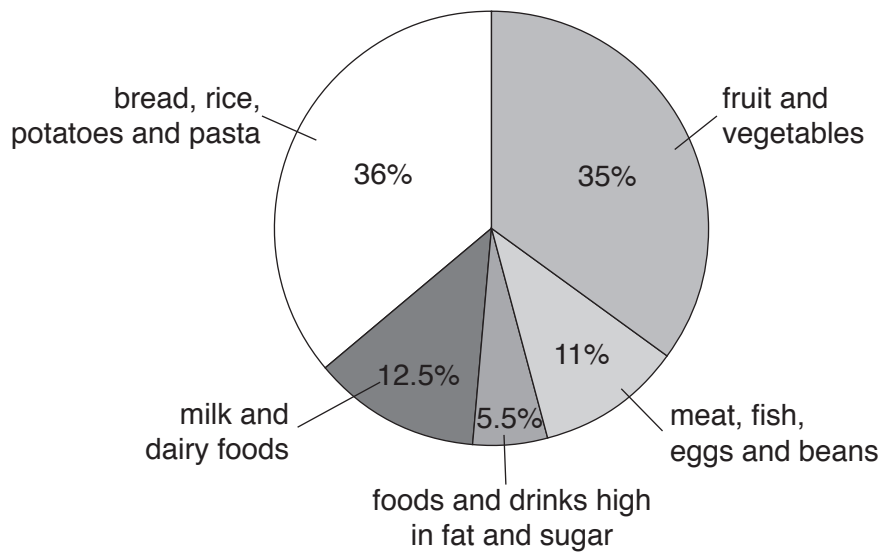


Fig. 4.1

- (i) Bread, rice, potatoes and pasta form 36% of this diet.

Explain why these foods are important to the body.

.....

.....

.....

.....

.....[2]

- (ii) State the foods shown in Fig. 4.1 that are rich in protein **and** state why proteins are important to the body.

.....

.....

.....

.....

.....[2]

- (iii) Only 5.5% of this diet is made up of food and drinks that are high in fat and sugar.

Describe **one** harmful effect of eating too much fat.

.....

.....

.....[1]

- (iv) The diet in Fig. 4.1 would **not** be suitable for everyone's needs.

State **and** explain **two** factors that could affect a person's dietary needs.

.....

.....

.....

.....

.....

.....

.....[4]

[Total: 11]

5 Genetic engineering can be used to improve crops.

(a) Explain the meaning of the term *genetic engineering*.

.....

.....

.....

.....

.....[2]

Fig. 5.1 shows part of a newspaper article about a new variety of corn.

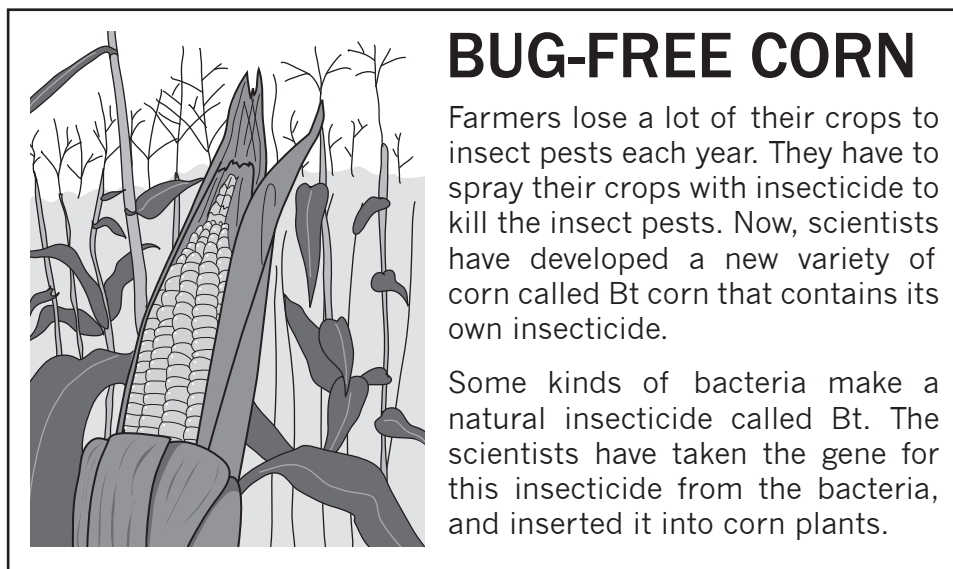


Fig. 5.1

(b) (i) The new Bt corn contains a gene taken from bacteria.

Define the term *gene*.

.....

.....

.....

.....

.....[2]

- (ii) Use the information in Fig. 5.1 to suggest how the addition of this gene could increase the farmer's corn crop.

.....

.....

.....

.....

.....[2]

- (c) Corn plants are wind-pollinated.

- (i) Describe what is meant by the term *pollination*.

.....

.....[1]

- (ii) Fruit trees are pollinated by insects.

Suggest why growing Bt corn near to apple trees might reduce the yield of the fruit crop.

.....

.....[1]

- (d) The development of Bt corn is one example of genetic engineering.

State **two other** examples of genetic engineering.

1

.....

2

.....

[2]

[Total: 10]

6 Hormones play an important part in controlling the human body.

(a) Define the term *hormone*.

.....

.....

.....

.....

.....

.....

.....

.....[3]

(b) Fig. 6.1 shows some parts of the human body where hormones are made.

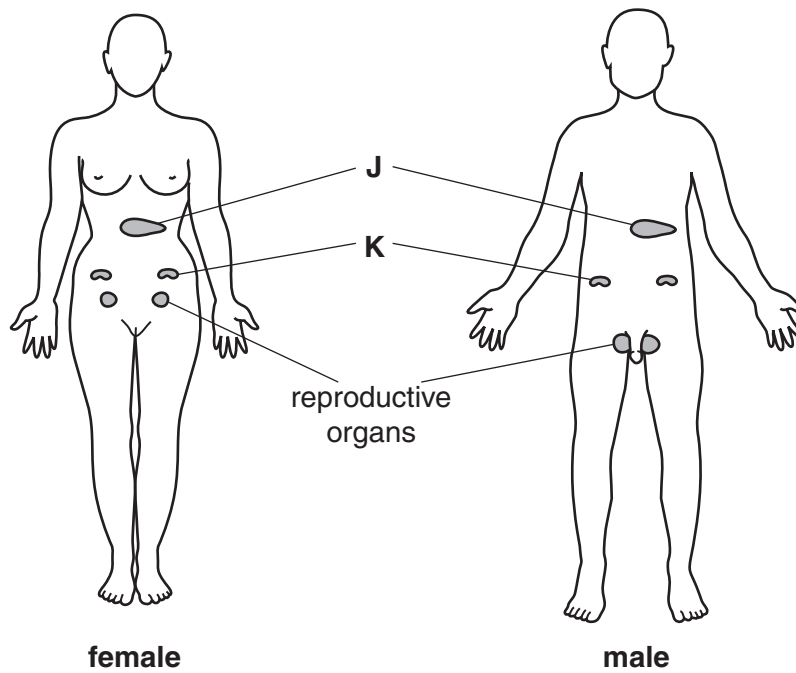


Fig. 6.1

- (i) Complete Table 6.1 by identifying and naming each part and stating the name of a hormone produced by each of the parts.

Some examples have been done for you.

Table 6.1

part	name	hormone
J		insulin
K		adrenaline
reproductive organs	ovaries	
		

[5]

- (ii) Adrenaline increases the heart rate.

State **one** example of a situation when adrenaline is produced **and** suggest why this response is important.

.....

.....

.....

.....

.....[2]

[Total: 10]

7 The development of biological washing powders using enzymes from bacteria is an example of biotechnology.

(a) State **two** reasons why bacteria are useful in biotechnology, such as in the development of biological washing powders.

- 1
-
- 2
-

[2]

(b) Fig. 7.1 shows part of a label taken from a packet of '5 Star Bio' washing powder.

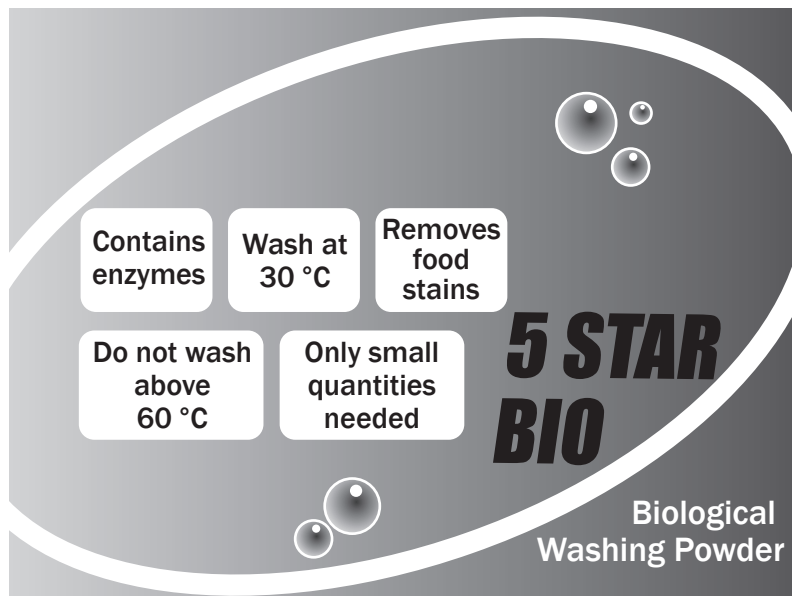


Fig. 7.1

Use the information shown in Fig. 7.1 to:

(i) explain how this washing powder removes food stains

-
-
-
-
-[2]

- (ii) explain why the manufacturer recommends washing at 30 °C and not above 60 °C

.....

.....

.....

.....

.....[2]

- (iii) suggest why only small quantities of washing powder are needed to wash a large quantity of clothes.

.....

.....[1]

- (c) Name an enzyme that could be used to remove fat stains from clothing.

.....[1]

[Total: 8]

8 Fig. 8.1 shows a drawing of a section through a human eye.

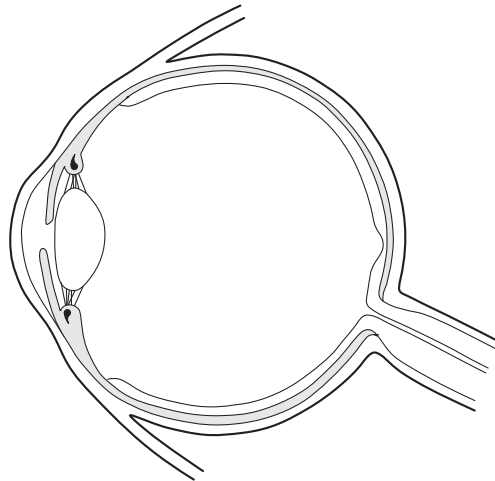


Fig. 8.1

- (a) (i) On Fig. 8.1, label **and** name the part of the eye which focuses light to form a clear image. [2]
- (ii) On Fig. 8.1, label **and** name the part of the eye where the image is formed. [2]

(b) Glaucoma is a disorder which affects the eyes.

Some forms of glaucoma can be inherited.

(i) What is meant by the term *inherited*?

.....

.....

.....[1]

(ii) Glaucoma can be caused by a recessive allele, **g**.

Explain the meaning of the terms:

recessive

.....

allele

.....

.....

[2]

- (c) Fig. 8.2 shows part of a family tree in which some of the people have the type of glaucoma that is caused by the recessive allele, **g**.

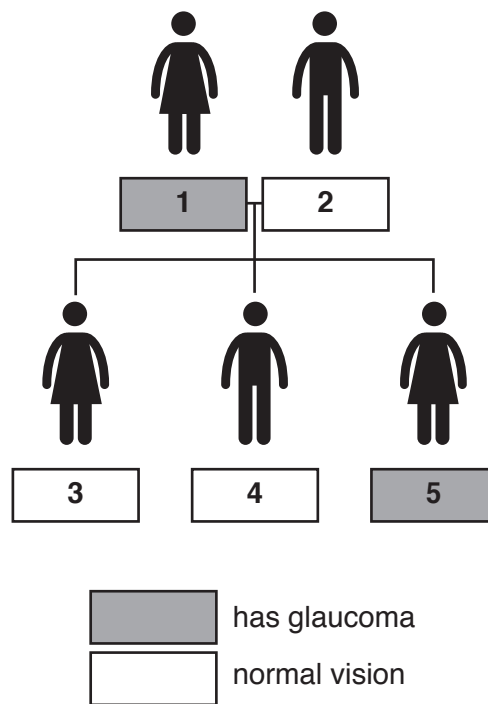


Fig. 8.2

Using **G** to represent the dominant allele and **g** to represent the recessive allele, complete the table to show the genotype of each member of the family.

person	genotype
1	
2	
3	
4	
5	

[3]

[Total: 10]

- 9 (a) Fig. 9.1 shows a diagram of a sustainable fish farm.

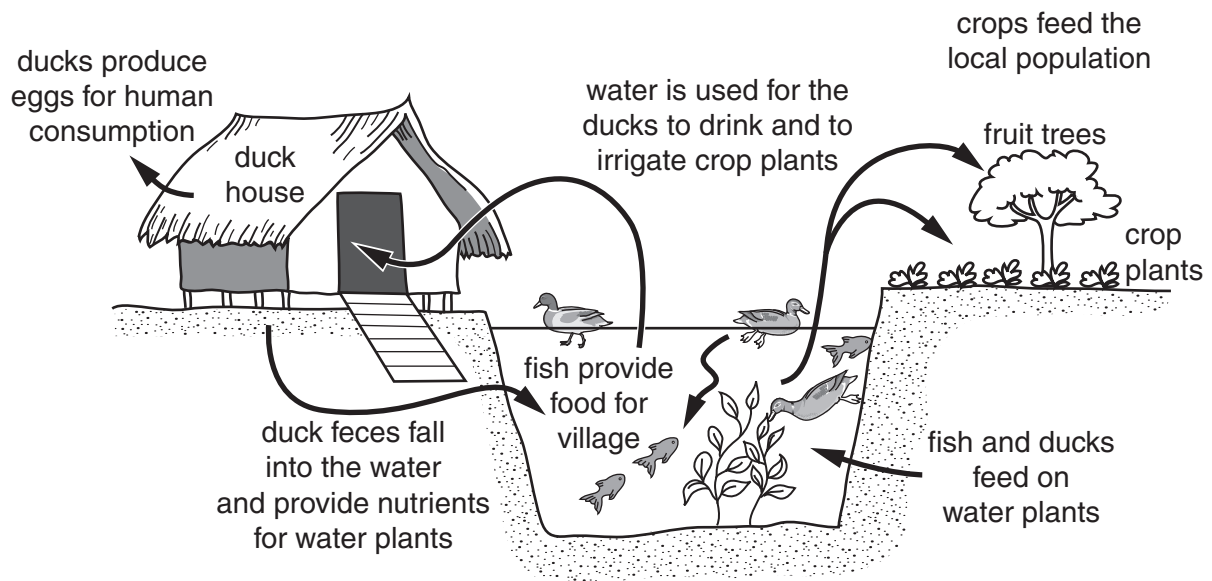


Fig. 9.1

- (i) The fish grown in this fish farm are herbivores.

Define the term *herbivore*.

.....
[1]

- (ii) Other organisms in the pond break down dead or decaying matter.

Name this group of organisms.

.....[1]

- (iii) The method of fish farming shown in Fig. 9.1 is a good example of the conservation of resources.

Suggest **three** reasons for this statement.

1

 2

 3

[3]

(b) Explain what is meant by a *sustainable resource*.

.....

.....

.....

.....

.....[2]

[Total: 7]

10 Fig. 10.1 shows an early stage in the birth of a baby.

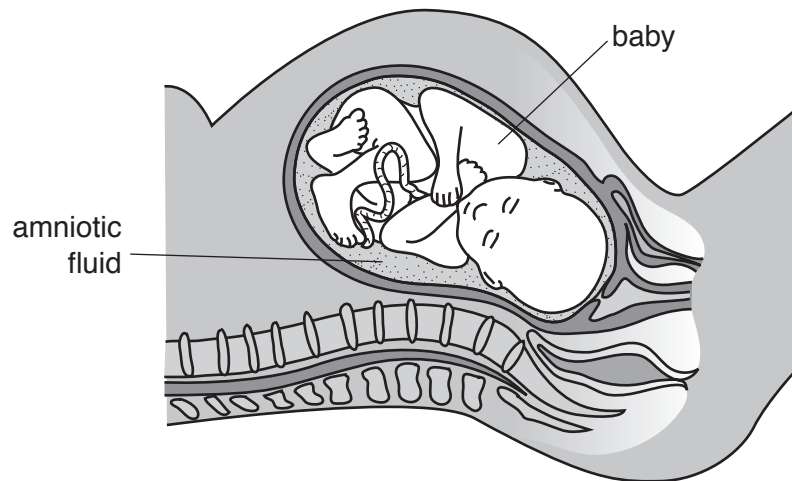


Fig. 10.1

(a) The unborn baby is surrounded by amniotic fluid.

Describe **one** function of this liquid.

.....
.....[1]

(b) The list describes six stages in the birth of a baby.

They are **not** in the correct order.

amniotic sac bursts

baby passes down vagina

cervix dilates

contractions begin

placenta delivered

umbilical cord is cut

Complete the boxes by writing the descriptions of the stages in the correct order.

Two of the stages have been completed for you.

contractions begin
↓
.....
↓
.....
↓
.....
↓
umbilical cord is cut
↓
.....

[3]

[Total: 4]

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge International Examinations Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cie.org.uk after the live examination series.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.